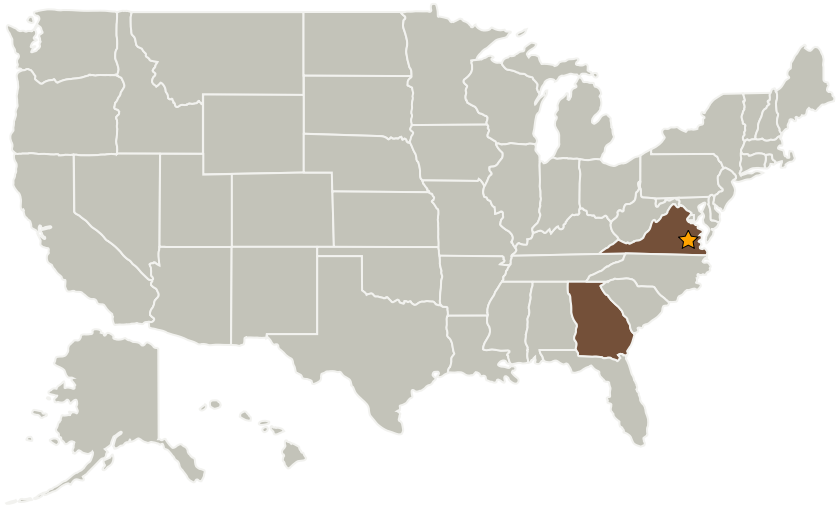
Advanced Turbulence Modeling for Unsteady and Stalled Flows, Phase I

Completed Technology Project (2008 - 2008)

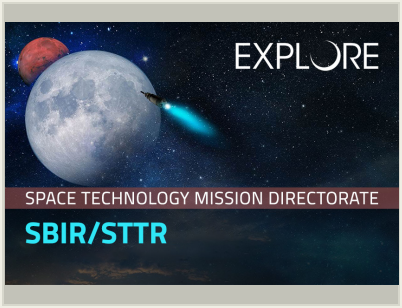
Project Introduction

The NASA code OVERFLOW is used extensively by academia, government institutions, and industry for a wide range of applications. Successful completion of Phase 1 and 2 efforts will enhance the solver and provide more accurate computations. These computations can be used to better understand the underlying physics of stalled and unsteady flow. Specifically, the advanced model can be used to test a variety of configurations that can reduce the drag of commercial transport aircraft. It can also increase the understanding of dynamic stall in rotor blades and other highly unsteady complex flows. This model has shown improved Turbulence modeling for stall prediction for UH-60 Blackhawk in the NASA solver OVERFLOW. More validation will allow inclusion into official OVERFLOW code released to industry and government partners. Industry can use this advancement to current and future advanced aerospace designs. Improved stall prediction and more accurate drag calculations increase the use of CFD, improve designs, and reduce the need for expensive experiments

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Intech Software Solutions, Inc.	Supporting Organization	Industry	Norcross, Georgia



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
Georgia	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Salil Gulve

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.3 Aeroelasticity